

WHAT IS CLAIMED IS:

1. An oligomeric KDEL receptor inhibitor protein comprising a plurality of protein subunits, wherein each subunit comprises an oligomerization domain and has, at its carboxy terminus, a region which binds to a KDEL receptor.
2. The KDEL receptor inhibitor protein of claim 1, wherein the region which binds to a KDEL receptor has the amino acid sequence Lys-Asp-Glu-Leu.
3. The KDEL receptor inhibitor protein of claim 1, wherein the oligomerization domain is a pentamerization domain.
4. The KDEL receptor inhibitor protein of claim 2, wherein the oligomerization domain is a pentamerization domain.
5. The KDEL receptor inhibitor protein of claim 3, wherein the pentamerization domain is derived from a cartilage oligomeric matrix protein.
6. The KDEL receptor inhibitor protein of claim 1, wherein the oligomerization domain is derived from a thrombospondin protein.
7. The KDEL receptor inhibitor protein of claim 5, wherein the pentamerization domain has the amino acid sequence Gly-Asp-Leu-Ala-Pro-Gln-Met-Leu-Arg-Glu-Leu-Gln-Glu-Thr-Asn-Ala-Ala-Leu-Gln-Asp-Val-Arg-Glu-Leu-Leu-Arg-Gln-Gln-Val-Lys-Glu-Ile-Thr-Phe-Leu-Lys-Asn-Thr-Val-Met-Glu-Cys-Asp-Ala-Cys-Gly (SEQ ID NO: 1).
8. The KDEL receptor inhibitor protein of claim 5, wherein the pentamerization domain has the amino acid sequence Ser-Asp-Leu-Gly-Pro-Gln-Met-Leu-Arg-Glu-Leu-Gln-Glu-Thr-Asn-Ala-Ala-Leu-Gln-Asp-Val-Arg-Asp-Trp-Leu-Arg-Gln-Gln-Val-Arg-Glu-Ile-Thr-Phe-Leu-Lys-Asn-Thr-Val-Met-Glu-Cys-Asp-Ala-Cys-Gly (SEQ ID NO:2).
9. The KDEL receptor inhibitor protein of claim 6, wherein the oligomerization domain has the amino acid sequence Gly-Glu-Gln-Thr-Lys-Ala-Leu-Val-Thr-Gln-Leu-Thr-Leu-Phe-Asn-Gln-Ile-Leu-Val-Glu-Leu-Arg-Asp-Asp-Ile-Arg-Asp-Gln-Val-Lys-Glu-Met-Ser-Leu-Ile-Arg-Asn-Thr-Ile-Met-Glu-Cys-Gln-Val-Cys-Gly (SEQ ID NO:3).
10. The KDEL receptor inhibitor protein of claim 6, wherein the oligomerization domain has the amino acid sequence Gly-Glu-Gln-Thr-Lys-Ala-Leu-Val-Thr-Gln-Leu-Thr-Leu-Phe-Asn-Gln-Ile-Leu-Val-Glu-Leu-Arg-Asp-Asp-Ile-Arg-Asp-Gln-Val-Lys-Glu-Met-Ser-Leu-

Ile-Arg-Asn-Thr-Ile-Met-Glu-Cys-Gln-Val-Cys-Gly (SEQ ID NO:4).

11. The KDEL receptor inhibitor protein of claim 6, wherein the oligomerization domain has the amino acid sequence Gly-Asp-Phe-Asn-Arg-Gln-Phe-Leu-Gly-Gln-Met-Thr-Gln-Leu-Asn-Gln-Leu-Leu-Gly-Glu-Val-Lys-Asp-Leu-Leu-Arg -Gln-Gln-Val-Lys-Glu-Thr-Ser-Phe-Leu-Arg-Asn-Thr-Ile-Ala-Glu-Cys-Gln-Ala-Cys-Gly (SEQ ID NO:5).

12. The KDEL receptor inhibitor protein of claim 6, wherein the oligomerization domain has the amino acid sequence Gly-Asp-Val-Ser-Arg-Gln-Leu-Ile-Gly-Gln-Ile-Thr-Gln-Met-Asn-Gln-Met-Leu-Gly-Glu-Leu-Arg-Asp-Val-Met-Arg-Gln-Gln-Val-Lys-Glu-Thr-Met-Phe-Leu-Arg-Asn-Thr-Ile-Ala-Glu-Cys-Gln-Ala-Cys-Gly (SEQ ID NO:6).

13. The KDEL receptor inhibitor protein of claim 1, wherein the oligomerization domain has the amino acid sequence Gln-Lys-Leu-Gln-Asn-Leu-Phe-Ile-Asn-Phe-Cys-Leu-Ile-Leu-Ile-Cys-Leu-Leu-Leu-Ile-Cys-Ile-Ile-Val-Met-Leu-Leu (SEQ ID NO:7).

14. An isolated nucleic acid encoding a KDEL receptor inhibitor of claim 1.

15. An isolated nucleic acid encoding a KDEL receptor inhibitor of claim 2.

16. An isolated nucleic acid encoding a KDEL receptor inhibitor of claim 3.

17. An isolated nucleic acid encoding a KDEL receptor inhibitor of claim 4.

18. An isolated nucleic acid encoding a KDEL receptor inhibitor of claim 5.

19. An isolated nucleic acid encoding a KDEL receptor inhibitor of claim 6.

20. A method of increasing the secretion of a protein by a cell, wherein the protein comprises a ligand sequence which binds to a KDEL receptor, comprising exposing the cell to a KDEL receptor inhibitor at a concentration which increases the secretion of the protein from the cell relative to the secretion of the protein in the absence of the KDEL receptor inhibitor.

21. The method of claim 20, wherein the KDEL receptor inhibitor is an oligomeric KDEL receptor inhibitor protein comprising a plurality of protein subunits, wherein each subunit comprises an oligomerization domain and has, at its carboxy terminus, a region which binds to a KDEL receptor.

22. The method of claim 21, wherein the region of the KDEL inhibitor protein which binds to a KDEL receptor has the amino acid sequence Lys-Asp-Glu-Leu.

23. The method of claim 21, wherein the oligomerization domain of the KDEL

inhibitor protein is a pentamerization domain.

24. The method of claim 22, wherein the oligomerization domain of the KDEL inhibitor protein is a pentamerization domain.

25. The method of claim 23, wherein the pentamerization domain is derived from a cartilage oligomeric matrix protein.

26. The method of claim 21, wherein the oligomerization domain is derived from a thrombospondin protein.

27. The method of claim 24, wherein the pentamerization domain is derived from a cartilage oligomeric matrix protein.

28. The method of claim 22, wherein the oligomerization domain is derived from a thrombospondin protein.

29. A method for promoting the release of a heat shock protein/antigenic peptide complex from a cell, where the heat shock protein contains a ligand sequence which binds to a KDEL receptor, comprising exposing the cell to a KDEL receptor inhibitor at a concentration which increases the secretion of the complex from the cell relative to the secretion of the complex in the absence of the KDEL receptor inhibitor.

30. The method of claim 29, wherein the KDEL receptor inhibitor is an oligomeric KDEL receptor inhibitor protein comprising a plurality of protein subunits, wherein each subunit comprises an oligomerization domain and has, at its carboxy terminus, a region which binds to a KDEL receptor.

31. The method of claim 30, wherein the region of the KDEL inhibitor protein which binds to a KDEL receptor has the amino acid sequence Lys-Asp-Glu-Leu.

32. The method of claim 30, wherein the oligomerization domain of the KDEL inhibitor protein is a pentamerization domain.

33. The method of claim 31, wherein the oligomerization domain of the KDEL inhibitor protein is a pentamerization domain.

34. The method of claim 32, wherein the pentamerization domain is derived from a cartilage oligomeric matrix protein.

35. The method of claim 30, wherein the oligomerization domain is derived from

a thrombospondin protein.

36. The method of claim 33, wherein the pentamerization domain is derived from a cartilage oligomeric matrix protein.

37. The method of claim 31, wherein the oligomerization domain is derived from a thrombospondin protein.

38. A method of inducing or increasing an immune response to a target antigen, comprising administering, to a subject in need of such treatment, an effective amount of a KDEL receptor inhibitor, where the target antigen forms a complex with a heat shock protein and the heat shock protein contains a ligand sequence which binds to a KDEL receptor.

39. The method of claim 38 wherein the target antigen is an endogenous antigen.

40. The method of claim 38 wherein the target antigen is an antigen which has been introduced into the subject.

41. The method of claim 38 wherein the heat shock protein is an endogenous heat shock protein.

42. The method of claim 38 wherein the heat shock protein has been introduced into the subject by the administration of a nucleic acid encoding the heat shock protein.

43. A non-human transgenic animal carrying a transgene encoding the KDEL receptor inhibitor protein of claim 1 operably linked to a promoter sequence.